CLAIMS

1. A method for altering the properties of a capillary-pore membrane by linking at least one compound to said membrane via an endogenous carboxyl group inherent in said membrane.

2. The method according to claim 1, wherein said alteration of said capillary-pore membrane is by attachment of one or more molecules, particles, units of matter, or combination thereof within one or more of said transmembrane passageways via covalent linkage with said endogenous carboxyl groups using any chemical procedure, thereby forming a configured separation membrane.

3. The method according to claim 1, wherein said endogenous carboxyl groups are modified using any chemical procedure prior to covalent attachment of one or more of molecules, particles, units of matter, or combination thereof within one or more of said transmembrane passageways using any chemical procedure, thereby forming a configured separation membrane.

4. The method according to claim 2 wherein carbodiimide reaction is used to accomplish said alteration of said membrane by linkage of a molecule, particle, or unit of matter containing an amine group with said endogenous carboxyl groups.

5. The method according to claim 2 wherein carbodiimide reaction is used to accomplish said alteration of said membrane by linkage of a molecule, particle, or unit of matter containing a thiol group with said endogenous carboxyl groups.

6. The method according to claim 2 whereinthe endogenous carboxyl groups are reacted to form anhydrides.

7. A method of use of a capillary-pore membrane configured as in claim 2, to assess and/or quantitatively describe changes in a solution by detection of changes in one or more physical or chemical properties of one or more of said molecules, particles, units of matter, or combination thereof positioned within one or more transmembrane passageways.

8. A method of use of a capillary-pore membrane configured as in claim 3, to assess

and/or quantitatively describe changes in a solution by detection of changes in one or more physical or chemical properties of one or more of said molecules, particles, units of matter, or combination thereof positioned within one or more transmembrane passageways.

9. A method of use of a capillary-pore membrane configured as in claim 2, to assess and/or quantitatively describe changes in a solution by detection of changes in one or more physical or chemical properties of one or more fluorescent molecules positioned within one or more transmembrane passageways.

10. A method of use of a capillary-pore membrane configured as in claim 3, to assess and/or quantitatively describe changes in a solution by detection of changes in one or more physical or chemical properties of one or more fluorescent molecules positioned within one or more transmembrane passageways.

11. A method of use of a capillary-pore membrane configured as in claim 2, to assess and/or quantitatively describe changes in a solution on the basis of changes in absorbance or physical spectrum of one or more molecules positioned within one or more transmembrane passageways.

12. A method of use of a capillary-pore membrane configured as in claim 3, to assess and/or quantitatively describe changes in a solution on the basis of changes in absorbance or physical spectrum of one or more molecules positioned within one or more transmembrane passageways.

13. A method of use of a capillary-pore membrane configured as in claim 2, to modify a solution via catylatic, enzymatic, or other actions performed by one or more molecules, particles, units of matter, or combination thereof positioned within one or more transmembrane passageways.

14. A method of use of a capillary-pore membrane configured as in claim 3, to modify a solution via catylatic, enzymatic, or other actions performed by one or more molecules, particles, units of matter, or combination thereof positioned within one or more transmembrane passageways.

15. A method of use of a capillary-pore membrane configured as in claim 2, to control flow rate of fluid through one or more transmembrane passageways, or to initiate, terminate, or in a reversible manner initiate and terminate flow of fluid through one or more transmembrane passageways.

16. A method of use of a capillary-pore membrane configured as in claim 3, to control flow rate of fluid through one or more transmembrane passageways, or to initiate, terminate, or in a reversible manner initiate and terminate flow of fluid through one or more transmembrane passageways.

17. A method of use of a capillary-pore membrane configured as in claim 2, to add a solute, ion, or other matter to a solution via release from one or more molecules, particles, units of matter, or combination thereof positioned within one or more transmembrane passageways.

18. A method of use of a capillary-pore membrane configured as in claim 3, to add a solute, ion, or other matter to a solution via release from one or more molecules, particles, units of matter, or combination thereof positioned within one or more transmembrane passageways.

19. A method of use of a capillary-pore membrane configured as in claim 2, to selectively remove a solute, ion, or other matter from a solution via binding or containment by one or more molecules, particles, units of matter, or combination thereof positioned within one or more transmembrane passageways.

20. A method of use of a capillary-pore membrane configured as in claim 3, to selectively remove a solute, ion, or other matter from a solution via binding or containment by one or more molecules, particles, units of matter, or combination thereof positioned within one or more transmembrane passageways.

21. A method of use of a capillary-pore membrane configured as in claim 2, to selectively monitor changes in the environment near or within said transmembrane passageways including chemical potential, electrochemical potential, electromagnetic radiation, light, osmotic force, pH, or temperature.

22. A method of use of a capillary-pore membrane configured as in claim 3, to selectively monitor changes in the environment near or within said transmembrane passageways including chemical potential, electrochemical potential, electromagnetic radiation, light, osmotic force, pH, or temperature.

23. A method of use of a capillary-pore membrane configured as in claim 2, to provide remedial action, to counter environmental changes detected by one or more molecules, particles, units of matter, or combination thereof positioned within said transmembrane passageways, via release of one or more appropriate materials from within or through the same or other transmembrane passageways.

24. A method of use of a capillary-pore membrane configured as in claim 3, to provide remedial action, to counter environmental changes detected by one or more molecules, particles, units of matter, or combination thereof positioned within said transmembrane passageways, via release of one or more appropriate materials from within or through the same or other transmembrane passageways.